

॥ अंतरी पेदवुं ज्ञानज्योत ॥



North Maharashtra University,

Jalgaon

Syllabus for

**Diploma in
Computer Application**

(w.e.f. July, 1999)

NORTH MAHARASHTRA UNIVERSITY JALSAON
SYLLABUS FOR
~~ADVANCED~~ DIPLOMA IN COMPUTER APPLICATION
(With effect from July, 1999)

101. 'C' ++

1. Introduction : Difference between C c++. The Object-Oriented Approach, Object-oriented methodologies in Analysis. Design and Programming Characteristics of Object-Oriented Languages-Classes, Objects, Encapsulation, Inheritance, Polymorphism. C++ and C.
2. Structures : An Introduction, Other Structure Features, Structures within Structures, Enumerated Data Types.
3. Functions : Simple Functions, Passing Arguments to Functions, Returning Values from Functions, Reference Arguments, Overloaded Functions, Address of an overloaded function, passing an address of an overloaded function as an argument to another function, Inline Functions, Default Arguments, variables and Storage Classes.
4. Objects and Classes : A Simple Class, Difference between class, structure and union in C++, C++ Objects, Constructors and Destructors Concept of an ADT, Constant member function, Objects as Function Arguments, Returning Objects from Functions, Classes, Objects and Memory, Static Class Data.
5. Operator Overloading Introduction, Overloading, Unary and Binary Operators, Concatenating Strings, Comparison operators. Arithmetic Assignments Operators, Data Conversion-Between Basic Types, Between Objects and Basic Types. When to Use What.
6. Inheritance : Derived Class and Base Class. Derived Class Constructors, Class Hierarchies, Public and Private Inheritance, Multiple Inheritance, Containership-Classes within Classes. Inheritance and Program Development.
7. Pointers : The Delete and New Operator, Pointers to Object, An Array of Pointers to Objects, Pointers to Pointers, Debugging Pointers, Difference between pointers and references.
8. Virtual Functions and Other Subtleties : Virtual Function, Pure Virtual Functions, Friend Functions, Static Functions, Assignments and Copy Initialization. The Copy Constructor, The this Pointer, Abstract classes.
9. Introduction to templates and exception handling, Function with Templates.
10. Files and Streams : Streams, String I/O, Character I/O, File Pointers, Error Handling, Redirection, Command-Line Arguments, Pointer Output, Overloading the << and >> Operators.
11. Linkage of C and C++.
Internal assignments :
The Internal assignments should be such that the design aspects of Object Oriented Programming be highlighted.

Practicals for C Programming

1. Write and run a program that reads three integers and prints the minimum and maximum. Use the conditional expression operator.
2. Updating is a routine task in the maintenance of any data file. The updating would include one or more of the following tasks:
 - . Displaying the contents of a file.
 - . Modifying an existing item.
 - . Adding a new item.
 - . Deleting an existing item.
3. Write a program which reads a text from the keyboard and displays the following information on the screen in two columns.
 - (1) Number of lines.
 - (2) Number of words
 - (3) Number of characters.Strings should be left-justified and numbers should be right-justified in a suitable field width.

102 INTRODUCTION TO ORACLE

- 1.1 Basic concepts of Database
- 1.2 Introduction & comparison between DBMS & RDBMS
- 1.3 Advantages of RDBMS over DBMS
- 1.4 Oracle - A Relational Database Management system
- 1.5 Comparison between different Oracle Products
Professional Oracle, Oracle UNIX, personal Oracle,
etc.
- 1.6 Database Administrator (DBA)
- 1.7 Database Users
- 1.8 Concept of Normalization including 1NF, 2NF, 3NF

2-INTERFACING WITH ORACLE DATABASE

- 2.1 Basics of structured Query Language (SQL)
- 2.2 Data Definition Language (DDL) statements
 - Creating a table by CREATE TABLE
 - Modifying a table by ALTER TABLE
 - Deleting a table by DROP TABLE
 - Displaying a structure of table by DESCRIBE
 - Renaming a table by RENAME
- 2.3 Data Manipulation language (DML) statements
 - Inserting Record by INSERT
 - Updating Record by UPDATE
 - Deleting Records by DELETE,
- 2.4 Data control Language (DCL) Statements
 - COMMIT, ROLLBACK, GRANT, REVOKE
- 2.5 Concept of Views
- 2.6 Database constraints
 - NULL/NOT NULL, CHECK, UNIQUE, DEFAULT, PRIMARY KEY,
FOREIGN KEY
- 2.7 The ORACLE Data Types

3- INVOKING SQL * PLUS

- 3.1 Basic structure of a query with SELECT, FROM, WHERE
- 3.2 Selecting specified rows & columns through SQL
- 3.3 Operators in ORACLE
 - Arithmetical, Relational & Logical
- 3.4 Pattern Matching using LIKE
- 3.5 Arranging the data by ORDER BY, GROUP BY, HAVING
- 3.6 Checking data by IN, BETWEEN, ALL, ANY, EXISTS, etc
- 3.7 Joining multiple tables using UNION, INTERSECT & MINUS
- 3.8 Working with ORACLE functions
 - Arithmetical functions - ABS(), MOD(), CEIL(), FLOOR(), ROUND (), TRUNC(), SQRT(), SIGN(), POWER().
 - Character functions LOWER(), UPPER(), INITCAP(), LENGTH(), INSTR(), SUBSTR(), LTRIM(), RTRIM(), LPAD(), RPAD(), CHAR(), ASCII(), etc
- 3.9 Queries using multiple Tables
- 3.10 Subqueries/Nested Queries

4- PROGRAMMING IN ORACLE WITH PL/SQL

- 4.1 Basics of PL/SQL
 - Additional Data types, Variables, constants
- 4.2 Structure of PL/SQL BLOCK
 - DECLARE, BEGIN, EXCEPTION
- 4.3 Handling Tables in PL/SQL
- 4.4 Manipulation data from databases using PL/SQL
- 4.5 Cursor Management
 - Opening a cursor
 - Defining a cursor
 - Fetching a cursor
 - Closing a cursor
 - Handling cursors using % FOUND, %NOTFOUND, % ROWCOUNT
 - Explicit and Implicit cursors
- 4.6 Conditional Statement IF-ELSE-ENDIF
- 4.7 Looping Statements LOOP-ENDLOOP, WHILE, FOR
- 4.8 Displaying messages on screen DBMS-OUTPUT. PUT-LINE()

5 - PROCEDURES, FUNCTIONS & TRIGGERS

- 5.1 Introduction to procedures & functions
- 5.2 Basic structure of Procedure/function
- 5.3 Calling a Procedure/function
- 5.4 Concept of stored Procedures & Stored Functions
- 5.5 Concept of Triggers
- 5.6 Types of Triggers
- 5.7 Creating Triggers & Dropping Triggers

6. FORMS 4.5

- 6.1 Introduction to Forms 4.5
- 6.2 Properties Windows and layout Editor, Blocks and Items, Defining Items
- 6.3 Triggers, Canvas-views and windows, Master/Detail relationship
- 6.4 Alerts and Editors, LOVs, Record groups, Libraries
- 6.5 Manipulating properties and Property Classes, Form Parameters, Menus.

7. REPORTS 2.5

- 7.1 Introduction to Reports 2.5, Creating Default Reports.
- 7.2 Creating a Simple Break Report, Creating Detailed Break Report
- 7.3 Matrix, Form Letter types of Reports.

REFERENCE BOOKS

- 1. Understanding Oracle - by James T. Perry
- 2. Oracle 7.0 by Ivan Bayross
- 3. Commercial Applications Development using Developer 2000 - by Ivan Bayross
- 4. Personal Oracle for Windows-95 by David Lockman
- 5. Oracle 7.3 Developers Guide by Singh, Leigh, Zafian

ORACLE PRACTICALS

- 1. Informations about 'Loading a ORACLE'
- 2. Handling Tables in ORACLE
Using create Table, Alter Table, Drop Table, Describe Table, Renaming Tables.
- 3. Manipulating Data from a Table
Using Insert, Delete, Update
- 4. Displaying Data through SQL
Using - SELECT, FORM, WHERE
- Order By, Group by, Having Clauses
- Arithmetical, Relational & Logical Operators
- in, Between, all, any
- 5. More on Queries
Using - Arithmetical, Character, Date, conversion and Aggregate functions
- Intersect, Union & Minus joining
- Multiple Table Handling
- Nested Queries
- 6. Programming with PL/SQL
- Simple PL/SQL Blocks
- PL/SQL Blocks using crursor
- Application Programs using PL/SQL
- 7. Create & Execute a sample FORM using FORM 4.5
- 8. Create & Execute a sample Report using REPORTS 2.5

103. VISUAL BASIC

- 1) Introduction to VB - Tool Box, Project Window, Properties Windows, Menu design wondows, etc.
- 2) Writing a program by - Drawing the interface, Setting a few properties, writing some program code.
- 3) Forms, controls and properties using specific types of controls- Labels, Text boxes, Command Buttans, Frames, Check Boxes, etc.
- 4) Forms, Codes Modules and VBX files - Fiddling with text and numbers
- 5) Making Decisions - If.....Then, IfThen..... Else, Select case
- For Next, Do Loops
- 6) Working with files
- 7) Using Menu Design Windows, Adding items to a Menu, Assigning shortcut Keys, Creating a Dialog Box
- 8) Error handling using on Error statement, on Error GOTO, etc.
- 9) Using Arrays and Creating files.

104. BUSINESS APPLICATIONS

1. Financial Accounting :
Introduction to computerised accounting system Coding Methods
By Books, Ledger, Trial Balance, Balance Sheet, Profit and Loss Account.
Input Controls-Audit Trail.
Management and statutory reporting.
2. Fixed Deposit System :
Types of deposit schemes-Category or Depositors Statutory Provisions.
Interest Warrants and Deposit Register.
Maturity and Renewal Procedures.
Statutory and Management Reports.
Payroll Processing :
Payslip Printing.
Statutory Reports such as P.F., E.S.I, and Labour Welfare Fund.
Payment of Bonus.
Costing and Management Reports.
4. Sales Order Processing :
Order acceptance and Recording
Sales Invoicing.
Sales Analysis based on Products, Customers and Terms.
5. Inventory Management :
Purchase order processing.
Stores accounting.
-Storestransactions-Receipts, Issues and Adjustments.
-Bin Cards and Stock Ledger.
-Inventory Levels-EOQ-ABC analysis,
Inventory Control Reports such as Slow Moving/Non-Moving Items.
6. Meterial Planning :
-Bill of Material
-Computing Gross/Net requirements.
7. Banking :
Functions and Reports related to Savings Bank Accounting.
8. Hotel Management :
Department Organisation of Hotel such as Room Occupancy, Room Service, Restaurants, House-keeping, Conferencing, Exhibitions, Parties, etc.
Kitchen Stores Accounting .
reservation, Check-in and Check-out.
Service Accounting and Bill Printing.
Management Reports.
9. Hospital Management :
Departmental Organisation of Sospital such as In-Patient, Out-patient, Laboratories, Pharmacy, Surgical Rooms etc.
Medical Stores Accounting.
Registration, Shifting and Discharge of patients.
Service Accounting and Bill Printing.
Management Reports.

105 : VISUAL FOXPRO

Basics : Introduction to the Project Manager and Visual FoxPro Designers, Using Toolbars and Wizards.

Overview of Visual Foxpro's Facilities : Explring a Databvase, Creating a New Table, Query, Report Creat a one-to-many form, Add controls from a Class Library, Add a control with a Builder

Creating tables : Storing and Viewing Information in Tables, Modifying the Structure of a Table, Creating a New Table, Customizing Tables.

Organizing data using Indexes: Concept of Indexes, Creating an Index, Using Indexes.

Collecting Tables into a Database : Working with a database, Creating a New Database, Setting Field Properties, Using Referential Integrity

Querying Data : Desingning a query, Selecting Fields for the Query Selecting the records as desired, Ordering query results, Grouping query results, Directing the results of a Query, Running a Query, Customizing Queries.

Updating Data with Views : Creating Views, Viewing and Updating Remote Data, Customizing Views.

Querying and Updating Multiple Tables: Querying Multiple Tables and Views, Using Multiple Tables in Views, Using Multiple Remote Tables in a View, Combining Local and Remote Data in a View

Designing Reports and Lables : Designing Reports, Creating a Report Layout, Creating Mailing Label Layout, Modifying Layout, Customizing Layout, Previewing and Printing a Report or Label.

Displaying Data in Forms : Creating Forms, Modifying a Form, Adding Controls to a Form, Customizing Forms, Saving Forms, Running a Form.

Importing and Exporting Data : Importing Data, Appending Data, Exporting Data.

Sharing Information with Other Applications : Copying and Pasting Data, Creating Mail Merges, Linking or Embedding Data.

References : Microsoft Visual Foxpro User's Guide (Version 3.0).

106. PRACTICALS

Based on C++ ,and Oracle,Visual Base, Visual Foxpro there should be minimum 20 practiclcs based 5 practicals each topic

The practical examination shall be conducted by two external examiners appointed by the University which shall carry 60 marks and the internal assesment of practical examination shall be conducted by the Institute which shall carry 40 marks.

107. PROJECT WORK AND VIVA :

Internal Assessment shall be carry 40 marks and External Assessment shall cary 60 marks